Application/Control Number: 10/716,117
Examiner: ECHELMEYER, Alix Elizabeth

REMARKS

Applicant has amended the claim. Specifically, claim 1 has been amended to point out that the inorganic substances are selected from a group consisting of a lithium ion conductive crystal and a lithium ion conductive glass ceramic. Claims 6, 8 and 10 were amended to change "a" to "the" when referencing lithium ion conductive crystals and glass-ceramics. Claim 7 was cancelled. All the amended claim language is supported by the original disclosure and does not constitute new matter. Cf. page 5, paragraph 1, Present Application.

The Examiner has rejected claims 1-5, 7, 9, 11, 12, 16 and 17 under 35 U.S.C. § 102(b) as being anticipated by Ota et al. (U.S. Patent No 6,365,300 herein Ota).

Applicant respectfully disagrees.

Applicant submits that the cited prior art reference fails to disclose all the elements found in the amended claims. Claim 1 has been amended to include a more specific definition of the lithium ion conductive inorganic substance. Specifically, amended claims 1 provides that the lithium ion conductive inorganic substances are selected from a group consisting of a lithium ion conductive crystal and a lithium ion conductive glass-ceramic.

The Ota patent discloses an amorphous type electrolyte in the form of a thin film. In contrast, amended claim 1 discloses a solid electrolyte made of a lithium ion conductive inorganic substance which is selected from a group consisting of a lithium ion conductive crystal and lithium ion conductive glass-ceramic. Thus, the Ota patent reference does not disclose a lithium ion secondary battery comprising a solid electrolyte in the form of a thin film comprising an inorganic substance made of either a lithium ion conductive crystal or lithium ion conductive glass-ceramic, and, therefore, the claims of the present invention are not anticipated by the Ota patent reference.

Claims 2-5, 7, 9, 11, 12, 16 and 17 are all dependent directly or indirectly on claim 1. Since amended claim 1 is not anticipated by the cited prior art patent, those claims that depend from claim 1 are also not anticipated.

The Examiner has rejected claims 6, 8 and 10-13 under 35 U.S.C. § 103(a) as being unpatentable over Ota as applied to claims 1 and 9 above in view of Fu (U.S. Patent Number 5, 702, 995 herein the Fu patent).

Applicant respectfully disagrees.

Ota describe in column 4, lines 16-25, than when a inorganic solid electrolytic layer is polycrystallized, it becomes difficult to form a dense, continuous film layer of inorganic solid electrolytes. The Ota patent reference further points out that that the use of polycrystallized electrolytic layers results in deterioration of battery performance. Lastly, the prior art reference states that it is desirable that the electrolytic layer be amorphous. Therefore, when the electrolytic layer is made in the form of a thin film, the Ota patent reference specifically teaches away from the use and presence of a crystal in the inorganic solid electrolytic layer. As such, the Ota patent reference does not suggest forming the electrolyte with a crystal or glass-ceramic as in the present invention.

The Fu patent reference fails to provide sufficient disclosure of the use of crystal electrolyte. The Fu patent reference is limited to a disclosure of lithium ion conductive glass-ceramics. It does not point out the use of thin crystal film electrolytes.

Amended claim 6, which is dependent on amended claim 1 points out non-obviousness subject matter because it recites that the thin film electrolyte is selected from a group consisting of a lithium ion conductive crystal and a lithium ion conductive glass-ceramic.

The cited Fu patent reference solely points out glass-ceramics. The Ota patent reference solely discloses a thin film electrolyte in amorphous form. More importantly, the Ota patent reference teaches away from the use of a "polycrystallized" form of electrolyte. Therefore, there is no motivation for those skilled in the art to employ the

glass-ceramics of the Fu patent reference to the electrolyte of the battery of the Ota patent reference. Additionally, even if there were a motivation to combine the two prior art patents, the resulting combination would fail to disclose the use of a crystal in the electrolyte since the Ota patent specifically points away from the use of crystal electrolytes.

Based on the above, Applicants respectfully submit that the claims of the present invention are in proper form for allowance. Favorable consideration and early allowance are therefore respectfully requested and earnestly solicited.

Respectively submitted,

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